DOCUMENT RESUME

ED 412 272 TM 027 622

AUTHOR	Collins, Mary A.; Brick, J. Michael; Kim, Kwang; Stowe, Peter
TITLE	Measuring Participation in Adult Education. National Household Education Survey. Technical Report.
INSTITUTION	Westat, Inc., Rockville, MD.; National Center for Education Statistics (ED), Washington, DC.
REPORT NO	NCES-97-341
PUB DATE	1997-05-00
NOTE	50p.
PUB TYPE	Reports - Evaluative (142)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	*Adult Education; Adults; Census Figures; Comparative Analysis; *Data Collection; *Estimation (Mathematics); National Surveys; *Participation; *Research Methodology; Sampling; Selection; Telephone Surveys
IDENTIFIERS	*Current Population Survey; *National Household Education Survey

ABSTRACT

The National Household Education Survey (NHES) is a data collection system of the National Center for Education Statistics that is designed to provide information on educational issues that can best be studied through contacting households rather than educational institutions. This report compares the information collected through telephone interviews by the NHES on adult education in 1991 and 1995 with that collected through the Current Population Survey (CPS) of the Bureau of the Census at 3-year intervals between 1969 and 1984 and in 1992. Included in the study were examinations of population coverage and the selection of adults for interviews, survey nonresponse, the use of proxy reports of adult education participation, and survey context. In the NHES in 1991, 60,314 households were screened, and the total number of adult interviews completed was 12,568, a figure that included 9,774 adults who participated in adult education within the preceding 12 months. In 1992, approximately 57,000 households were interviewed for the CPS, a monthly survey of households. Estimates of adult education participation provided by the CPS are substantially lower than those from the NHES. The 1984 participation estimate from the CPS was 14% and the 1992 estimate was 21%. Differences in CPS and NHES estimates range from 13 to 20%. Examination of methodological, operational, and definitional issues that might account for the differences suggest that NHES figures are more accurate, although even these figures may underestimate participation. Reasons for the discrepancies are discussed. An appendix presents adult education participation items from the surveys. (Contains 9 tables and 37 references.) (SLD)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

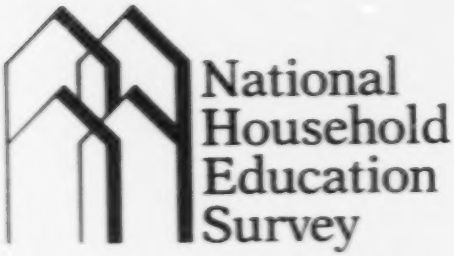
ED 412 272

NATIONAL CENTER FOR EDUCATION STATISTICS

Technical Report **May 1997**

National Household Education Survey

Measuring Participation in Adult Education



U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☐ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

U.S. Department of Education
Office of Educational Research and Improvement **NCES 97-341**

TM 027622

BEST COPY AVAILABLE

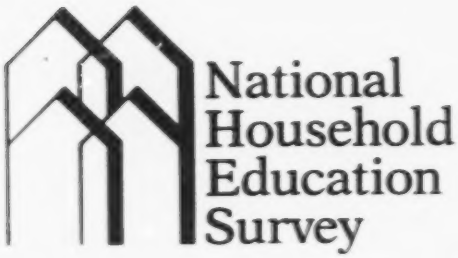
SCOPE OF INTEREST NOTICE
The ERIC Facility has assigned this document for processing to: TM
In our judgment, this document is also of interest to the Clearinghouses noted to the right. Indexing should reflect their special points of view. CE

NATIONAL CENTER FOR EDUCATION STATISTICS

Technical Report May 1997

National Household Education Survey

Measuring Participation in Adult Education



Mary A. Collins
J. Michael Brick
Kwang Kim
Westat, Inc.

Peter Stowe, Project Officer
National Center for Education Statistics

U.S. Department of Education
Office of Educational Research and Improvement NCES 97-341

U.S. Department of Education
Richard W. Riley
Secretary

Office of Educational Research and Improvement
Ramon C. Cortines
Acting Assistant Secretary

National Center for Education Statistics
Pascal D. Forgione, Jr.
Commissioner

The National Center for Education Statistics (NCES) is the primary federal entity for collecting, analyzing, and reporting data related to education in the United States and other nations. It fulfills a congressional mandate to collect, collate, analyze, and report full and complete statistics on the condition of education in the United States; conduct and publish reports and specialized analyses of the meaning and significance of such statistics; assist state and local education agencies in improving their statistical systems; and review and report on education activities in foreign countries.

NCES activities are designed to address high priority education data needs; provide consistent, reliable, complete, and accurate indicators of education status and trends; and report timely, useful, and high quality data to the U.S. Department of Education, the Congress, the states, other education policymakers, practitioners, data users, and the general public.

We strive to make our products available in a variety of formats and in language that is appropriate to a variety of audiences. You, as our customer, are the best judge of our success in communicating information effectively. If you have any comments or suggestions about this or any other NCES product or report, we would like to hear from you. Please direct your comments to:

National Center for Education Statistics
Office of Educational Research and Improvement
U.S. Department of Education
555 New Jersey Avenue NW
Washington, DC 20208–5574

May 1997

The NCES World Wide Web Home Page is
http://www.ed.gov/NCES/

Suggested Citation
U.S. Department of Education. National Center for Education Statistics. National Household Education Survey. *Measuring Participation in Adult Education*, NCES 97–341, by Mary A. Collins, J. Michael Brick, and Kwang Kim. Project Officer, Peter Stowe. Washington, DC: 1997.

Contact:
Peter Stowe
(202) 219–2099
(e-mail) nhes@ed.gov
http://www.ed.gov/NCES/NHES

TABLE OF CONTENTS

Introduction 1

The National Household Education Survey 1
The Current Population Survey 2
What is Adult Education? 3

Adult Education Participation Rates 4

Population Coverage and Selection Methods 6

Telephone Coverage and Estimates of Participation 7
Selection of Adults 11

Survey Nonresponse 13

Proxy Reports of Adult Education Participation 15

Survey Context 20

Questionnaire Wording 20
Interview Status: Sponsorship and Survey Focus 22

Summary 24

References 28

Appendix A A-1

LIST OF TABLES

1	Estimated number of adults and percentage of those participating in adult education from the Current Population Survey and the National Household Education Survey: 1984-1995	5
2	Comparisons of AE participation rates from NHES:91, CPS:92, and NHES:95 Splice sample	6
3	Estimated percent of persons by telephone status and estimated coverage bias for adults	10
4	Number and percent of sampled adults whose participation status changed from screener to extended interview completion by Screener respondent: NHES:95	13
5	Number of sampled adults, by self/proxy reporting status and demographic characteristics: CPS:92	17
6	Percent of adults participating in adult education activities, by source of report: 1992	18
7	Logistic regression parameters for a main effects model of AE participation, excluding full-time degree programs	19
8	Observed and predicted participation rates if all adults had self-reported, by type of participation: CPS:92	19
9	Summary of factors associated with possible biases in estimates of adult education participation, by survey and possible size of bias	25

Introduction

The measurement of participation in adult education (AE) activities presents a number of definitional and methodological challenges. Zemsky and Shapiro (1993) note that estimates of job-related training differ "not just widely, but wildly," and liken the attempt to provide accurate training estimates to "measuring a mirage." Estimates of participation in a broad range of adult education activities from the National Household Education Survey and the Current Population Survey also vary (Hill 1987; Korb, Chandler, and West 1991; Kim et al. 1995). The ways in which a given research study defines adult education and the methods used to sample persons and collect information about their educational experiences may have a substantial impact on the observed rates of participation.

The purpose of this report is to compare two studies that have yielded disparate rates of AE participation at several points in time, and to examine the definitional and methodological factors that may lead to these different results. The two studies on which this analysis focuses are the National Household Education Survey (NHES) and the Current Population Survey (CPS). The NHES included adult education components in 1991 and 1995. The CPS collected information on participation in adult education every three years from 1969 through 1984, and the 1984 participation rate is discussed in this report. In addition, the CPS included a brief set of questions on adult education in the October 1992 educational supplement; those items replicated items used to estimate the AE participation rate in the NHES:91. Included in this study are examinations of population coverage and the selection of adults for interviews, survey nonresponse, the use of proxy reports of adult education participation, and survey context. In each of these investigations, the appropriate data sets are used to examine the specific issue at hand, because not all of the selected data sets lend themselves to each of the methodological factors explored in this research.

Before proceeding further, brief overviews of each of these data collection systems are presented.

The National Household Education Survey

The National Household Education Survey (NHES) is a data collection system of the National Center for Education Statistics (NCES), which has as its legislative mission the collection and publication of data on the condition of education in the Nation. The NHES is specifically designed to support this mission by providing information on those educational issues that can be addressed by contacting households rather than schools or other educational institutions. The NHES provides descriptive data on the educational activities of the U.S. population and offers policy makers, researchers, and educators a variety of statistics on the condition of education in the U.S. By focusing specifically on educational topics of interest, the NHES permits the collection of more in-depth information than can be collected in supplements to existing household surveys.

The NHES is a telephone survey of the noninstitutionalized civilian population of the U.S. Households are selected for the survey using random digit dialing (RDD) methods, and data are collected using computer-assisted telephone interviewing (CATI) procedures. About 45,000 to 64,000 households are screened for each administration, and individuals within households who meet predetermined criteria are sampled for more detailed or extended interviews. The data are weighted to make estimates of the entire population. The NHES survey for a given year typically consists of a Screener, which collects household composition and demographic data, and extended interviews on two substantive components addressing education-related topics. In order to assess data item reliability and inform future NHES surveys, each administration also includes data quality activities, such as a reinterview with a subsample of respondents.

The primary purpose of the NHES is to conduct repeated measurements of the same phenomena at different points in time and one-time surveys on topics of interest to the Department of Education. Throughout its history, the NHES has collected data in ways that permit estimates to be tracked across time. This includes repeating topical components on a rotating basis in order to provide comparative data across survey years. In addition, each administration of the NHES has benefited from experiences with previous cycles, resulting in enhancements to the survey procedures and content. Thus, while the survey affords the opportunity for tracking phenomena across time, it is also dynamic in addressing new issues and including conceptual and methodological refinements.

Full-scale implementations of the NHES have been conducted in 1991, 1993, 1995, and 1996. Topics addressed by the NHES:91 were early childhood education and adult education. The NHES:93 collected information about school readiness and school safety and discipline. The 1991 components were repeated for the NHES:95, addressing early childhood program participation and adult education. Both components underwent substantial redesign to incorporate new issues and develop new measurement approaches. In the NHES:96, the topical components were parent/family involvement in education and civic involvement, and an expanded screening approach provided state-level estimates of public library use by household.

In the NHES:91, 60,314 households were screened and the total number of completed adult education interviews was 12,568, which included interviews with 9,774 adults who participated in adult education in the previous 12 months and 2,794 interviews with adults who did not participate. In the NHES:95, of the 45,465 households with completed screener interviews, 19,722 adult education interviews were completed, including 11,713 AE participants and 8,009 AE nonparticipants. The NHES:95 also contained a methodological experiment to help evaluate whether any changes between 1991 and 1995 were the result of changes in the design of the interview or were due to changes in the participation rate over time. This methodological experiment, called the NHES:95 Splice sample, used the interview design of the NHES:91. A total of 4,082 Splice sample interviews was completed in the NHES:95. More details on the NHES:95 data collection and public use data files are given in *National Household Education Survey of 1995: Adult Education Data File User's Manual* (Collins et al. 1996).

The Current Population Survey

The Current Population Survey (CPS) is a monthly survey of households conducted by the U.S. Bureau of the Census. The main purpose of the CPS is to provide estimates of employment, unemployment, and other characteristics of the labor force. Through the use of supplements to the main CPS interview, estimates are obtained for other topics of interest. Among these are supplements pertaining to educational issues. For example, the October School Enrollment Supplement provides specific information on the enrollment status of individuals in the population by demographic and socioeconomic characteristics. A supplement on participation in adult education activities was conducted every three years from 1969 through 1984 (Hill 1987). Questions on adult education were also included in October 1992, and this brief set of questions replicated the items used to estimate the participation rate in the NHES:91; the same questions were used in the NHES:95 AE Splice sample interview described above.

The CPS is a sample of the civilian, noninstitutionalized population of the United States, and estimates from the survey exclude active duty military personnel. The CPS is based on a multistage stratified probability sample. The first stage involves sampling Primary Sampling Units (PSUs) from homogeneous strata where the PSUs are counties or groups of counties. In the second stage a cluster of addresses is sampled from each of the sampled PSUs. The persons living in the sampled addresses are interviewed in a rotation scheme. The addresses are included in

the sample for four consecutive months, excluded for eight months, then included for four more months. Typically, the first interview and the fifth interviews are done in person and the other interviews are done by telephone, where possible. More details on the design of the CPS is given in U.S. Department of Commerce (1978).

The total monthly sample size in 1992 was approximately 60,000 housing units, of which about 57,000 were interviewed. The household respondent must be a knowledgeable household member aged 14 years or more; this respondent provides information for each household member. In some cases, individuals are selected to respond to supplements about their activities or characteristics. However, in some supplements other knowledgeable household members (proxy respondents) may be allowed to respond if the targeted person is not available to complete the supplementary interview. In the October CPS supplement on adult education, 42 percent of the responses were by proxies. About two-thirds of all CPS interviews are conducted by telephone; the remainder are conducted by personal interviews. In the October CPS:92, the month in which the adult education supplement was conducted, 70 percent of the interviews were conducted by telephone.[1]

The triennial Adult Education Supplement to the CPS (1969-1984) was collected for adults who were reported by the household respondent as having participated in adult education activities in the previous 12 months. Persons who were not reported as participants were not asked to complete the AE supplement. Furthermore, the sampled adult became ineligible if that adult said they had not participated in adult education in the past year. In the AE supplement itself, adults were asked about their participation in a variety of educational activities. Those who had participated in activities other than, or in addition to, full-time enrollment were asked to describe the four most recent courses in which they participated (Hill 1987).

As noted above, in October 1992, data from adults about their participation in AE activities were again collected in the education supplement to the CPS. Adults were defined as civilian, noninstitutionalized persons 16 years or older who were not enrolled full-time in elementary or secondary school. In this survey, the participation items were those used in the NHES:91 AE component. The household respondent answered for all adult household members in most cases, so some data are proxy responses. The question only included the items defining participation and excluded the more detailed information on adult education collected in the NHES. All adults were eligible for this supplement without asking the household respondent any preliminary screening questions about the adult education participation of other adults in the household.

What is Adult Education?

The measurement of adult education participation is problematic in part because the learning activities that fall within the realm of adult education can be defined in a number of ways. Darkenwald and Merriam (1982) define adult education as participation in systematic learning activities for the purpose of acquiring new knowledge or skills by persons who have assumed adult social roles. This definition potentially encompasses a large range of activities that may include basic skills education, activities leading to academic credentials, work-related courses or training, and courses or programs taken for personal development, general interest, or recreation. In addition, the method of participation may include traditional schooling; participation in classes, workshops or seminars; self-directed learning through correspondence courses or computer- or video-based tutorials; or courses offered by television or on video or audio tapes (Knowles 1980).

[1] Special tabulation from the 1992 Current Population Survey.

Some studies of adult education focus specifically on basic skills education (Anderson and Darkenwald 1979), while others examine only work-related training (Frazis, Herz, and Horrigan 1995). Still others look at educational activities that include participation in structured, formal learning activities with an instructor, excluding self-teaching activities using books, television, video tapes, or audio tapes.

The estimate of the percentage of adults who participate in adult education activities, (i.e., participation rates, may differ by whether they include full-time or part-time activities, or both, and by whether they include courses leading to college degrees or other postsecondary credentials)(Hill 1987; Korb, Chandler, and West 1991; Kim et al. 1995). The broadest definition includes academic, vocational, work-related, and a vocational courses taken in classroom settings, in informal settings, and those involving the use of television, radio, video or audio tapes, or self-directed learning. The studies under investigation here, the NHES and the CPS, each took broad and inclusive approaches to defining adult education. Details about how adult education was defined and how those definitions affected estimates of participation rates are discussed in later sections of this report.

First, some estimates of AE participation from the NHES (1991 and 1995) and CPS (1984 and 1992) components on adult education are presented. Within the context of these disparate participation rates, subsequent sections of the report examine the definitions of adult education used and other methodological and operational differences that could account for some of the differences in the survey estimates.

Adult Education Participation Rates

Table 1 shows the total number of adults and the adult education participation rates for five data sources, in chronological order:

- The 1984 Adult Education Supplement to the CPS (CPS:84);
- The 1991 National Household Education Survey (NHES:91);
- The 1992 Adult Education Supplement to the CPS (CPS:92);
- The 1995 National Household Education Survey (NHES:95); and
- A special methodological study included in the NHES:95 in which a Splice sample (a separate, supplementary sample) was used to examine whether any differences in observed NHES rates were due to questionnaire changes made to the AE questionnaire between the 1991 and 1995 surveys (NHES:95 Splice).

Table 1 shows participation rates based on two different sets of AE activities: participation rates in any adult education activity and participation rates in adult education activity excluding full-time credential programs. The second type of participation rate includes participation in credential programs on a part-time basis or in activities other than credential programs on a part-time or full-time basis. The AE participation rates from these five data sources, in general, show a trend toward greater participation over time. This observed growth is consistent with the findings of the triennial adult education supplement to the CPS conducted from 1969 through 1984, which reflected modest but significant growth over the 15-year period (Hill 1987). However, the estimates from the CPS:84 and the CPS:92 are markedly lower than those from the NHES:91 and the NHES:95. One might be tempted to attribute the differences between the 1984 CPS participation rate of 14 percent and the NHES rates of 33 and 40 percent as reflecting continued growth in AE participation. However, the CPS:92 estimated rate of 20.5 percent, when considered in this chronological context, suggests that differences are not due to growth alone, and that there are aspects of the *measurement* of AE participation that are contributing to these disparate estimates.

Table 1.—Estimated number of adults[1] and percentage of those participating in adult education from the Current Population Survey and the National Household Education Survey: 1984-1995

Participation Rate	CPS:84	NHES:91	CPS:92	NHES:95	NHES:95 Splice
Number of adults (in thousands)	172,583	181,800	169,772	189,576	189,912
Any adult education activity	--[2]	37.9% (0.7)	24.0% (2.5)	44.3% (0.5)	44.6% (1.0)
Adult education activity excluding full-time degree programs	14.0% (0.1)	33.0% (0.7)	20.5% (0.5)	40.2% (0.5)	40.0% (1.0)

[1]Adults include persons age 16 and older not enrolled in elementary or secondary school and not on activity duty in the Armed Forces. Data from the 1984 survey (Hill 1987) include persons age 17 and older.

[2]Not available from the published report (Hill 1987).

NOTE: Standard error in parentheses.

SOURCES: U.S. Department of Commerce, Bureau of Census, Current Population Survey (CPS), 1984 Adult Education Supplement, 1992 Adult Education Supplement; U.S. Department of Education, National Center for Education Statistics, National Household Education Survey (NHES), spring 1991, spring 1995, spring 1995 Splice Sample Interview.

The specific types of adult education that were asked about in the NHES and CPS were examined in order to identify the types of activities that contributed to the differences in overall participation estimates. Table 2 shows the participation rates for the specific types of full-time and part-time AE activities. The CPS:92 estimates are significantly lower than the NHES:91 estimates for full-time participation in literacy programs and "other educational programs." In addition, the CPS:92 estimates of full-time participation are significantly lower than NHES:95 Splice estimates for associate's degree programs and ESL programs. More differences in participation rates are observed when part-time AE activities are examined. The CPS:92 estimates are significantly lower than the NHES:91 and NHES:95 Splice estimates for part-time continuing education, mail or television courses, private instruction or tutoring, and employer training. In addition, the CPS:92 estimates are lower than NHES:95 Splice estimates for part-time basic skills education and "other" part-time educational activities.

These findings indicate that the reporting of activities outside of formal schooling is more problematic than reports of formal schooling. This is consistent with the results of the NHES:95 reinterview program and a response bias study examining reports of AE participation in the NHES:95 AE interview (Brick et al. 1996a, Brick et al. 1996b).

Table 2.—Comparisons of AE participation rates from NHES:91, CPS:92 , and NHES:95 Splice Sample

Participation items	Participation rates in NHES:91	Participation rates in CPS:92	Participation rates in NHES:95 Splice
Full-time educational programs			
An elementary, junior high, or high school	11.7% (1.9)	13.3% (1.4)	13.6% (3.9)
An associate's degree program	23.1 (1.2)	18.6 (1.7)	29.4 (2.9)
A bachelor's or advanced degree program	63.4 (1.6)	61.1 (3.0)	58.7 (2.9)
A vocational/occupational training program	17.2 (1.1)	15.2 (1.5)	18.8 (2.6)
An adult literacy or basic skills program	3.6 (.6)	1.2 (.4)	5.6 (2.1)
An English as a Second Language program	2.3 (.4)	1.1 (.4)	4.4 (1.1)
Other educational program	2.4 (.6)	5.0 (.9)	2.1 (1.0)
Part-time educational programs			
Continuing education	12.0% (.4)	6.4% (1.0)	13.8% (.5)
Courses by mail, TV, radio	1.6 (.1)	.8 (.3)	2.7 (.4)
Private instruction	2.9 (.2)	.9 (.4)	4.5 (.5)
Training given by employer	22.5 (.6)	11.1 (.3)	29.9 (1.0)
Instruction in basic skills	1.3 (.1)	.6 (.3)	3.5 (.4)
Instruction in ESL	.6 (.5)	.6 (.3)	1.6 (.3)
Other educational activity	.6 (.1)	1.7 (.5)	.1 (.1)

NOTE: Standard error in parentheses.
SOURCES: U.S. Department of Commerce, Bureau of Census, Current Population Survey (CPS) 1992 Adult Education Supplement; U.S. Department of Education, National Center for Education Statistics, National Household Education Survey (NHES), spring 1991, spring 1995 Splice Sample Interview.

In the sections that follow, we discuss several aspects of the methods used in these five surveys and their potential effects on the observed participation rates. The specific aspects that are considered include:

- population coverage and selection methods;
- nonresponse;
- proxy reporting of adult education participation; and
- issues related to the context of the surveys.

Population Coverage and Selection Methods

In this section, factors associated with survey coverage of households and persons within households and the selection of adults within households for adult education data collection are discussed. The estimates for both the NHES and the CPS include all civilian,

noninstitutionalized adults, age 16 and older,[2] in the 50 states and the District of Columbia who were not enrolled in elementary or secondary school. However, there are differences between the CPS and the NHES, and differences between years within each survey, in the sampling of households and the selection of adults for the collection of information on AE participation. The NHES is an RDD telephone survey and includes only telephone households, whereas the CPS is a sample of both telephone and nontelephone households. Thus, the CPS covers adults living in households without telephones who are not sampled in the NHES.

Population coverage is not related to the coverage of households alone. The coverage of persons within households is also of concern. An investigation of within household coverage, comparing in-person and telephone surveys, was conducted by Maklan and Waksberg (1988). They found that within-household coverage is no more problematic in telephone surveys than in-person household surveys.

In addition to population coverage, there are also variations in the selection of adults within the households. In the CPS:84, only those adults identified as participants by the household respondent who completed the CPS AE screening items were sampled for the AE supplement. In the CPS:92, participation data were collected for all adults, but proxy reporting was used for most adults other than the household respondent. In the NHES:91 and NHES:95, adults were classified as participants and nonparticipants at the screening stage and both types of adults were sampled for AE extended interviews, but at different sampling rates. In the NHES:91, participants were sampled at rates up to 14 times greater than nonparticipants. In the NHES:95, both participation status and high school completion were considered in sampling, but there was less variation in the sampling rates with rates for participants and nonparticipants varying by a factor of five at a maximum.

Below, the implications of differences between the CPS and the NHES in terms of the coverage of households and the potential for lack of coverage of nontelephone households in the NHES as explanatory factors in the estimates of AE participation are examined. Following this, the implications of differences in selecting adults within households are addressed.

Telephone Coverage and Estimates of Participation

The telephone coverage of adults in the NHES:95 is discussed in some detail in Brick (1996). Some of the important findings of that work are summarized here. Approximately 94 percent of all persons live in households with telephones, according to data from the March 1992 CPS. The percentage of persons who live in households with telephones varies somewhat by characteristics of the populations considered. For example, while 95 percent of all adults age 16 years and older live in telephone households, only 87 percent of black adults and 88 percent of Hispanic adults live in telephone households, according to these CPS estimates. The difference in telephone coverage rates by characteristics of the population is one of the factors that leads to biases in statistics based on data collected from persons in telephone households only.

The term bias has a specific technical definition in this context; bias is the expected difference between the estimates from the survey and the actual population value. For example, if all telephone households were included in the survey and responded to the interview, the difference between the estimate from the survey and the actual population value (which includes the responses of persons living in nontelephone households) is the bias due to incomplete coverage. Since the NHES is based on a

[2] The 1984 CPS estimates are for adults age 17 and older. The NHES:91 sample includes only 17 eligible 16-year-olds out of a total adult sample of 12,568, and the NHES:95 sample includes only 13 eligible 16-year-olds out of a sample of 19,722. The NHES:95 participation rate is 40 percent regardless of whether 16-year-olds are included or not. Thus, the absence of 16-year-olds from the 1984 estimates is not problematic in considering differences in rates.

sample, the bias is defined as the expected or average value of this difference over all possible samples.

Coverage bias, the bias due to failure to give all persons a chance to be selected in the sample, can be substantial when two conditions hold. First, the differences between the characteristics in the covered population and the uncovered population must be relatively large. For example, consider estimating the percentage of persons enrolled in a given type of program. If the percentage enrolled is nearly identical in both the covered and uncovered populations, then the bias for the estimate will be negligible.

Second, the proportion of the population not covered by the survey must be large compared to the size of the estimates. If only 2 percent of the population is not covered, estimates that comprise 20 or 30 percent of the population will not be greatly affected, even if the differences in the characteristics between the covered and uncovered populations are relatively large. It is important to realize that this condition requires that the proportion not covered must be large *relative* to the size of the estimates. If the estimate is for a small domain or subgroup, then even a small undercoverage problem can result in important biases if the differences in the characteristic between the covered and uncovered populations are large. Statistics for dropouts from high school, a small subgroup, suffer from this problem (Brick, Burke, and West 1992).

The bias of an estimate can be expressed mathematically to show the relationships between the bias and the two factors discussed above. The bias is given by

$$Bias\ (\hat{Y}_t) = P_n \left\{ E(\hat{Y}_t - \hat{Y}_n) \right\} \qquad (1)$$

where $\hat{Y}_t$ is the estimated characteristic based on the telephone households only, P_n is the proportion of nontelephone households, $\hat{Y}_n$ is the estimated characteristic based on the nontelephone households, and E is the expectation operator for averaging over all possible samples.

The undercoverage rate or proportion of adults in households without telephones, P_n, can be estimated directly from the CPS since it covers both telephone and nontelephone households. For adults eligible for the AE component of the NHES:91 and the NHES:95 (civilians who are 16 years old or older and not currently enrolled in elementary or secondary school), 5.6 percent lived in nontelephone households, according to the October 1992 CPS.

The differences in the characteristics of persons in telephone and nontelephone households have been explored for a number of topics by different authors. In general, these studies have shown that having a telephone is highly related to socioeconomic status and lifestyles (Smith 1990). Thornberry and Massey (1988) assessed estimates of health characteristics and found many health and health-related characteristics of persons in nontelephone households were significantly different from those of persons in telephone households. Brick, Burke, and West (1992), Brick (1992), and Brick (1996) studied a variety of estimates for education statistics. They found the differences between persons in telephone and nontelephone households for enrollment statistics were typically smaller than those reported by Thornberry and Massey (1988). However, for some statistics, such as those for high school dropouts, the differences were very large.

In order to examine the impact that excluding nontelephone households in the NHES could have on differences in estimates of participation in adult education, the adult education supplement to the October 1992 CPS was used to estimate the differences in the characteristics of persons in telephone and nontelephone households. These differences and the estimates of the percent of adults not covered can then be used in equation (1) to estimate the bias. However, this may overestimate the bias in the NHES because some weighting adjustments are made in the NHES to reduce the coverage bias. In particular, the NHES estimates are raked to

population totals of adults living in both telephone and nontelephone households.[3] By applying the NHES raking adjustment procedures to CPS data for telephone households, the amount of residual bias can be examined after the weighting adjustments.

Percentage distributions for selected characteristics of adults were tabulated from the October 1992 CPS supplement (table 3). The tabulation for adults was limited to those adults meeting the eligibility criteria for the AE components of the NHES, that is, civilians who are 16 years old or older and not currently enrolled in elementary or secondary school. The first three columns of table 3 show the estimated percentage distributions for persons in telephone households, persons in nontelephone households, and persons in all households. The fourth column in the table is the estimated coverage bias, or the difference between the estimate for persons in telephone households and the estimate for persons in all households; this is the algebraic equivalent of the bias given by equation (1).

The estimates in table 3 show that while the characteristics of adults living in telephone and nontelephone households may be very different, the resulting biases are generally small because the undercoverage rates (P_n) are relatively low. Thus, even though adults in telephone households were twice as likely as those in nontelephone households to have been involved in any activities in the last year (24.8 percent and 11.8 percent, respectively, from the row labeled "Involved in adult education activity in the past year" in table 3), the bias in the estimate due to undercoverage for this statistic is only 0.6 percent (the estimate for all adults, 24.2 percent, and the estimate for any adults in telephone households is 24.8 percent). Only 5 of the statistics in the table have estimated biases greater than 0.5 percent.

Due to the potential biases resulting from undercoverage, the standard practice in the NHES is to make statistical adjustments of survey weights to compensate, to the extent possible, for undercoverage. The NHES adjustments that are specifically developed to compensate for the undercoverage are raking or poststratification to known control totals that contain counts of persons living in both telephone and nontelephone households. The goal of these adjustments is to make the estimates from the survey consistent with known totals (referred to as control totals), to partially correct for undercoverage bias, and to reduce the variance of the estimates.

Control totals of the number of persons in both telephone and nontelephone households were first produced from the CPS file for adults eligible for the AE interview. The weights for the CPS respondents from telephone households were then raked to these control totals to produce adjusted weights that summed to the total number of persons in both telephone and nontelephone households. The responses from persons in telephone households were used with these adjusted weights to produce adjusted estimates. More details are given in Brick (1996).

[3] Raking is an iterative procedure that ensures that survey weights sum to known population totals. It is a calibration procedure and is closely related to poststratification.

Table 3.—Estimated percent of persons by telephone status and estimated coverage bias for adults

Characteristic	Telephone households	Non-telephone households	All households	Coverage bias	Adjusted telephone households	Adjusted coverage bias
Highest education						
Less than 12th	17.2	40.8	18.6	-1.4	17.9	-0.7
12th grade	36.6	36.7	36.6	0.0	36.5	-0.1
1 or 2 years college	18.2	9.8	17.7	0.5	18.0	0.3
3-4 years of college	15.0	3.4	14.5	0.5	14.7	0.2
More than 4 years of college	7.6	1.2	7.3	0.3	7.4	0.1
Persons aged 15 to 24 years						
High school graduate	88.1	53.7	85.4	2.7	87.6	2.2
Complete high school by equivalency test	4.8	8.7	5.1	-0.3	4.9	-0.2
Speak language other than English at home	13.5	19.6	14.0	-0.5	14.0	0.0
Do not speak English well	19.4	39.8	21.6	-2.2	20.1	-1.5
Ever had condition affecting ability to learn	3.2	3.3	3.2	0.0	3.5	0.3
Of those in college, enrolled full-time	65.1	69.7	65.2	-0.1	65.5	0.3
Now taking business, vocational, technical,	2.3	1.8	2.2	0.1	2.3	0.1
Reported for person						
Self	52.6	60.8	53.0	-0.4	52.8	-0.2
Parent	7.7	4.2	7.6	0.1	7.8	0.2
Spouse	23.8	13.9	23.3	0.5	23.4	0.1
Other relative	5.6	7.3	5.7	-0.1	5.6	-0.1
Nonrelative	2.7	6.4	2.9	-0.2	2.8	-0.1
Involved in adult education activity in last year						
Any activity	24.8	11.8	24.2	0.6	24.8	0.6
Any activity, excluding full-time college	20.0	9.9	19.6	0.4	19.9	0.3
Any activity, excluding college	17.6	8.1	17.2	0.4	17.5	0.3
Enrolled full-time in last year	6.1	4.4	6.0	0.1	6.3	0.3
In elementary or high school program	12.8	13.5	12.8	0.0	12.7	-0.1
In associated degree program	17.9	21.7	18.1	-0.2	18.0	-0.1
In bachelor's or advanced program	60.5	31.2	59.5	1.0	60.2	0.7
In vocation or occupational program	14.2	26.8	14.7	-0.5	14.4	-0.3
In literacy or ABE program	0.9	5.1	1.1	-0.2	1.0	-0.1
In ESL program	1.0	2.1	1.0	0.0	1.1	0.1
In other program	4.8	7.0	4.8	0.0	4.8	0.0
Enrolled part-time in college in last year	3.9	1.8	3.8	0.1	3.9	0.1
In other continuing ed or noncredit program	6.2	2.1	6.0	0.2	6.1	0.1
In mail, TV, radio, or newspaper courses	0.8	0.4	0.8	0.0	0.8	0.0
In private instruction	0.9	0.4	0.9	0.0	0.9	0.0
In program by employer, union, community organization	10.8	3.5	10.5	0.3	10.7	0.2
In basic math or English	0.6	1.0	0.6	0.0	0.6	0.0
In ESL	0.5	0.7	0.5	0.0	0.5	0.0
In other organized activity	1.6	0.8	1.6	0.0	1.6	0.0

Table 3.—Estimated percent of persons by telephone status and estimated coverage bias for adults—Continued

Characteristic	Telephone households	Non-telephone households	All households	Coverage bias	Adjusted telephone households	Adjusted overage bias
Involved in AE activity in last year, by race						
Hispanic adults						
Any activity	20.2	11.5	19.2	1.0	20.0	0.8
Black, non-Hispanic adults						
Any activity	19.3	11.2	18.3	1.0	19.1	0.8
Any activity, excluding full-time college	14.5	8.7	13.8	0.7	14.3	0.5
Any activity, excluding college	12.4	6.4	11.6	0.7	12.2	0.5
Nonblack, non-Hispanic adults						
Any activity	25.9	12.3	25.4	0.4	26.0	0.5
Any activity, excluding full-time college	21.0	10.3	20.7	0.3	21.0	0.3
Any activity, excluding college	18.6	8.9	18.3	0.3	18.6	0.3

NOTE: In this analyses, persons with missing values on participation variables are treated as nonparticipants.
SOURCE: Special tabulations from the 1992 Current Population Survey (CPS).

The adjusted estimates are shown in the next to last column in table 3. The adjusted bias in these statistics is given in the last column, where the bias is the difference between the adjusted estimate for those in telephone households and the estimate from all households. As before, a negative coverage bias indicates that the estimate is smaller than the estimate based on all households.

These estimates indicate that telephone coverage bias accounts for at most a very minor component of the differences in the observed adult education participation rates for the NHES AE components and the CPS AE supplements. In particular, the coverage bias for the percentage of adults participating in any adult education excluding full-time college is estimated to be only 0.6 percent (in bold in table 3). Thus, the percentage of the differences in the rates attributable to coverage bias is very small, especially when compared to the very large differences in the estimates from the CPS and NHES AE surveys.

Selection of Adults

Although the major focus is on differences between the CPS:92 and the NHES estimates, the differences between the CPS:84 and the NHES:91 estimates initiated this type of investigation and do have some implications for the comparison of the CPS:92 and the NHES differences. A factor that might account for some of the difference between the 1984 estimates and later estimates is the variation in procedures for selecting adults within households, that is, person-level sampling procedures. In both the NHES:91 and the CPS:84, a knowledgeable adult member of the household was asked a set of screening items about the adult education participation of each adult in the household; a single screening item was used for the NHES:95. In the CPS:84, the AE supplement was administered only to those adults who were classified at the screening stage as participating in adult education (Hill 1987). In the CPS:92, information was collected about all adults, but proxy reporting was permitted.

The CPS:92 can also be considered a screening interview like the CPS:84, but without a follow-up interview with any of the adults. Both these approaches are considered later. In the NHES:91 and NHES:95, adults screened as participants and as nonparticipants were sampled for adult education interviews with varying probabilities. For the Splice sample of adults in the NHES:95, participation status was not a factor in either the screening or the sampling procedures.

In some cases, the household respondent may have answered the screening items incorrectly for other members of the household because of lack of knowledge or because of recall error. Because nonparticipants were not selected for the CPS:84 AE supplement, these adults did not have an opportunity to report on their own activities, if any. Some screener respondents who reported that they did not participate might have recalled activities while completing the full interview if they had been given an opportunity to respond. This would have resulted in the adults being reclassified as participants.

The results of the NHES:91 and the NHES:95 support the notion that the estimated participation rate is reduced by excluding adults from the supplement based on participation status as reported in screening questions. In the NHES, both participants and nonparticipants were reclassified in terms of their participation status based on their responses at the extended interview level. We refer to the percentage change in status as the "switching rate."

In the NHES:91, about 11 percent of those sampled as AE nonparticipants who completed extended interviews were found to be AE participants and about 14 percent of persons sampled as participants who completed extended interviewers were identified as nonparticipants. In the CPS:84, the persons who were identified as nonparticipants were not sampled, so they had no chance to switch to participants in the extended interview. This scheme results in a lower estimate of the participation rate. Both weighted and unweighted estimates show that self-reporters were more likely to remain in the same status from the screener to the extended interview, whether they were initially identified as participants or nonparticipants.

Higher percentages of sampled adults were "switchers" in the NHES:95 (table 4). Of those sampled as participants, 17 percent were found to be nonparticipants. Of those sampled as nonparticipants, 23 percent were found to be participants. This higher rate of change is most likely related to a change in the screening question. In the NHES:95, a single brief screening question was used compared with a longer list of types of AE activities used in the NHES:91. This change in the screening procedure was made as a result of objections from screener respondents in the NHES:91 to having to respond to the full list of activities repeatedly for each adult in the household. Because both participants and nonparticipants were sampled in the NHES collections, the loss of accuracy associated with the single screening item was not considered a major issue, especially in light of the opportunity to reduce respondent annoyance that might otherwise lead to nonparticipation in the study.

The NHES:95 provides some additional insight on the "switching" phenomenon. Table 4 gives both weighted and unweighted estimates of switching, by the type of switching and the screener respondent (self or other). Not surprisingly, the extent to which switching occurred in the NHES:95 was associated with whether the sampled adult was the screener respondent or whether another adult in the household had answered the screening participation question about the sampled adult, with the switching rate greater for other household responders than for self responders.

The observed switching of status from the screening level to the extended interview level suggests that the CPS:84 participation rate would have been higher if persons who were initially identified by the household respondent as nonparticipants had an opportunity to report for themselves. Applying the NHES:91

switching rate to the CPS:84, the participation rate for the CPS:84 would have been about 23 percent. This increase of 9 percent from 14 to 23 percent results when the estimated 86 percent of nonparticipants in the CPS:84 are assumed to be switchers at the same rate as found in the NHES:91 (11 percent times 86 percent = 9 percent). The estimate of 23 percent is still substantially below the NHES:91 estimate of 32 percent, but accounts for a very large percentage increase in the participation rate.

Evidence from the CPS:92 indicates that the "switching" phenomenon alone does not account for the differences between the NHES and CPS estimates. As we saw earlier, the CPS:92 estimate is 20.5 percent if no adjustments are made to the estimates. If the NHES:91 switching rates are applied to the CPS:92 estimates, the adjusted estimate is 26.4 percent (20.5 percent times 86 percent plus 79.5 percent times 11 percent =26.4 percent). The difference between the adjusted estimate of 23 percent for the CPS:84 and the adjusted estimate of 26.4 percent suggests there was not a substantial increase in participation rates in the 8 years between the CPS surveys.

A different approach to adjusting the CPS:92 is to model the reporting of those who did not report for themselves. This proxy adjustment is discussed later, but it leads to an adjusted CPS:92 estimate of participation of 25 percent, which is very similar to the switching adjusted estimate. Both approaches to adjusting the CPS:92 reveal little substantial increase in adult education participation between 1984 and 1992. This contradicts the common impression that there has been an increase during this period. These results raise doubts about the validity of the estimate, especially the unadjusted estimate, from the CPS:92, even in comparison to the CPS:84 estimates, which have other methodological problems.

Table 4.—Number and percent of sampled adults whose participation status changed from screener to extended interview completion by Screener respondent: NHES:95

	Estimates			Sample size	
	Number (in thousands)	Percent switching	Standard error	Number	Percent switching
All adults					
Sampled as participants	68,971	16	.38	11,890	17
Sampled as nonparticipants	120,605	22	.58	7,832	23
Screens respondents (self)					
Sampled as participants	39,684	11	.41	7,029	11
Sampled as nonparticipants	73,979	19	.68	4,778	21
Not screener respondent (other)					
Sampled as participants	29,287	24	.65	4,861	25
Sampled as nonparticipants	46,626	26	.80	3,084	27

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Household Education Survey (NHES), spring 1995.

Survey Nonresponse

Just as undercoverage can result in biases in the estimates, nonresponse, or the failure to obtain a response from a sampled unit, may also cause the estimates from a survey to differ from the population values (Kalton and Kasprzyk 1986; Lessler and Kalsbeek 1992). Both the NHES

and the CPS suffer from nonresponse, although the rates of responding are different in the surveys. The potential impact of nonresponse on the differences in participation rate estimates in the surveys is investigated below.

Nonresponse is often classified as either unit nonresponse or item nonresponse. Unit nonresponse occurs when all or nearly all the data from the sampled unit (person, household) can not be obtained. Unit nonresponse may happen for several reasons, such as being unable to contact the unit, the respondent refusing, or the inability to complete the interview in the data collection time period. Item nonresponse occurs when most of the data are obtained, but some questions are not answered. As with unit nonresponse, there may be many reasons for item nonresponse, such as the respondent not wanting to answer a particular question like income, interviewer error in not asking the question, or inconsistent responses to items that are detected in later editing. Because item nonresponse is generally small compared to unit nonresponse in both the NHES and CPS, unit nonresponse is the focus of this examination of nonresponse as a potential source of differences between the survey estimates. However, those cases for which all AE items are missing in the CPS:92 (about 5.2 percent) are treated as unit nonresponse for this analysis.

The bias due to nonresponse can be expressed in the same way as the bias due to undercoverage. The bias of the estimate due to nonresponse can be written as equation (1), by simply changing the subscript t (for telephone households) to r (for respondents), and the subscript n now indicates nonrespondents while in equation (1) it referred to nontelephone households. Thus, the nonresponse bias equation is

$$Bias(\hat{y}_r) = P_n\{E(\hat{y}_r - \hat{y}_n)\}. \qquad (2)$$

As with coverage, this bias is a function of both the nonresponse rate (P_n) and the difference in characteristics of the respondents and the nonrespondents $(\hat{y}_r - \hat{y}_n)$. As the nonresponse rate becomes larger, the bias increases even if the difference between the characteristics for respondents and nonrespondents remains constant.

The response rates for the NHES:91 and the NHES:95 AE components were 69 percent and 59 percent respectively, while for the NHES:95 Splice sample the response rate was 64 percent. These response rates are weighted by the appropriate probabilities of selection and account for all levels of unit nonresponse (Screener and extended interviews). *The National Household Education Survey of 1995: Adult Education Data File User's Manual* (Collins et al. 1996) contains more information on the response rates for the NHES.

The data from CPS are also subject to nonresponse at two levels: failure to complete the core interview and failure to complete the supplement. The response rate to the core interview for the CPS is about 95.6 percent (U.S. Department of Commerce 1993). The percent of adults with completed AE supplement data is 94.8 percent. This yields a net response rate of 90.6 percent for the CPS:92 AE data. This response rate will be assumed for the adult education supplement for purposes of this assessment.

The second component of nonresponse bias is the differences in characteristics between the respondents and nonrespondents. For both surveys, it is very hard to quantify these differences because so little is known about the nonrespondents. Efforts to identify groups of households and adults that responded at different rates in the NHES (Brick and Broene forthcoming) did not reveal any major differences, but these efforts were limited by the lack of data on nonrespondents.

Although it is not possible to obtain much information on differences between respondents and nonrespondents at the screening stage, some data are available on those sampled for the extended interviews. It is clear from the NHES:91 that response to the AE interview was related to whether or not the household respondent said the sampled adult was a

participant in adult education activities. In the NHES:91, the completion rate (the percent of sampled adults who completed the extended AE interview) for participants was 90 percent and the completion rate for nonparticipants was 82 percent. In the NHES:95, the participant completion rate was 84 percent, while it was 77 percent for nonparticipants.

The difference in completion rates by participation status could result in a significant bias if nothing were done to address the differential bias. However, the differential response rates were recognized in the NHES:91 and the NHES:95 and nonresponse adjustments were made to the weights to account for the difference and minimize the potential bias. No such adjustments were made in the NHES:95 Splice sample because the participation status of the sampled adults was not asked in the Screener. In order to make this type of adjustment, data for both respondents and nonrespondents are needed, and if participation status is not collected in the Screener, this adjustment cannot be made. In the CPS, no special weighting adjustments were made for the supplement, but this may not have been as necessary due to the higher response rate in that study.

To quantify the potential nonresponse bias, an example assuming a large difference between the characteristics of respondents and nonrespondents is explored to provide an upper bound on this source of bias. Assume that the percent of *respondents* that are participants is 40 percent and the percent of *nonrespondents* that are participants is 20 percent. This is probably a large difference given the estimates from the various surveys. Applying equation (2) to these estimates with the NHES:95 nonresponse rate of 40 percent results in an estimated bias of 8 percent {40%(40%-20%)=8%}, implying that the participation rate from the NHES:95 could be as low as 32 percent (40% - 8 % =32%). The same approach can be applied to the CPS, assuming the same difference between respondents and nonrespondents, but with a nonresponse rate of 15 percent. This results in a bias in the CPS:92 estimate of 3 percent {15%(40%-20%)=3%}, implying an even lower participation rate of 21 percent (24% - 3% = 21%). The lower bias in the CPS is due to the higher response rate and is the rationale for the statement above that special weighting adjustments to account for the different response rates of participants and nonparticipants may not be as important in the CPS.

This exercise sheds some light on the potential for nonresponse bias in the estimates of the NHES and CPS. Estimates from both surveys may be biased, but the nonresponse bias in the NHES is probably larger than that in the CPS estimates. However, even assuming a very large difference between the characteristics of respondents and nonrespondents as was done in the example, the differential bias is probably 5 percent or less (8 percent in the NHES minus 3 percent in the CPS). While differential bias may be a large contributing factor, this alone does not account for the large disparity in the estimates from the two surveys.

Proxy Reports of Adult Education Participation

Proxy reporting of adults' participation in AE activities is allowed for some purposes in each of the data sets under consideration in this report, with the exception of the NHES:95 Splice interview. However, the surveys differ as to whether the proxy report is used only to select adults for interviewing or for classifying the AE participation status of the sampled adult. As noted above, in the CPS:84, a single household respondent reported on the participation status of all adults in the households and adults were selected for the AE supplement based on these proxy responses. Only those reported to be participants in the screening items were sampled for the supplement. The interview was conducted with the sampled adult, but proxy respondents could also respond. In the CPS:92, participation items were asked about all adults, but proxy responses were accepted for adults who were not available for interviews.

In the NHES:91 and the NHES:95, a household respondent to the screener reported on the participation of all adults in the household; however, the sample for the AE interviews included both participants and nonparticipants. The participation status of the adults was determined by responses to the extended interview that could only be answered by the sampled adult. No proxy responses were allowed for extended interviews. In the NHES:95 Splice interview, one adult was sampled per household without first asking about participation, so proxy reporting was not involved. Only the sampled adult was eligible to answer the AE Splice interviews; proxy responses were not accepted. Thus, the use of proxy respondents in the NHES was very different from that in the CPS.

Previous research on the reports of proxy respondents indicates that there may be some reporting error associated with this type of procedure (Moore 1988), but the results are not consistent or based on studies that permit valid estimation of the impact of proxy responses. In a study of reports of health status and satisfaction with medical care, Epstein et al. (1989) found differences between self and proxy reports, and found variation in the extent and direction of discrepancies based on such factors as the amount of time the proxy spent with the subject. In the field test of the NHES survey system, an analysis of proxy reports of the educational status of 14- to 21-year-olds indicated that the correspondence of proxy reports and self reports of dropout rates varied according to the timing of the dropout event (e.g., whether it had occurred in the previous year) and the age of the youth (Mohadjer et al. 1992). Thus, the issue of proxy reporting may be an important area to examine when assessing differences in AE participation rates.

In the CPS:84, persons who were identified as nonparticipants at the screening stage were not selected for the AE supplement. As a result, it is not possible to compare proxy and self-reports as a possible source of error.

In the NHES:91, if the AE interview respondent was the screener respondent, the participation questions (which were the same in the screener and extended interview) were not repeated, so that the adult did not have the opportunity to change his or her status under these conditions. All of the "switching" in the NHES:91 (described earlier) occurred when someone other than the adult sampled for the AE interview completed the screening items. In the NHES:95, a single brief screening item on participation in adult education was used for sampling purposes, and this item did not provide detail on what was included as adult education. As a result, the data collected in the NHES:95 does not support an analysis of the impact of proxy reporting on participation rates.

Only the CPS:92 provides an opportunity to observe differences in participation rates based on proxy and self reports. In an assessment of methodological evidence concerning the quality of proxy reports in surveys, Moore (1988) questioned the adequacy of extant work, primarily on the basis of measurement problems and lack of random assignment to self report or proxy report status. The CPS:92 data indicate that self and proxy reporting does not occur randomly, supporting Moore's concerns. About 58 percent of adults answered the AE items themselves, and 42 percent of cases had proxy respondents. In about 25 percent of proxy response cases, the proxy respondent was the spouse of the adult for whom he or she was reporting.[4]

Table 5 shows the percentages of adults for whom proxy responses were obtained for the adult education items, by several characteristics. Males, younger adults, Hispanic adults, those with more education, those who were employed, and those with higher incomes were more likely to have proxy respondents than females, older adults, non-Hispanic adults, those with less education, those not employed, and those with lower incomes. Because age, education, and labor force status are also associated with AE

[4] Special tabulations from the 1992 Current Population Survey (CPS).

participation (Korb, Chandler, and West 1991; Kim et al. 1995) these differences in rates of proxy reporting may confound any reporting error associated with the failure to obtain responses from the adult himself or herself. For example, higher rates of participation for those with proxy respondents could be related to differences in reporting by proxies, or to the fact that proxy reports are more likely for highly educated adults who participate in adult education at a higher rate than adults with less education.

Table 5.—Number of sampled adults, by self/proxy reporting status and demographic characteristics: CPS:92

Characteristics	Number of self-reporters	Number with proxy reporters	Percent proxy reporting
Total	56,425	40,645	42
Age			
Less than 30 years	10,248	11,415	53
30 to 49 years	24,123	16,420	41
50 years or older	22,054	11,810	37
Sex			
Male	20,299	24,837	55
Female	36,126	15,808	30
Race			
Black	5,512	3,475	39
Hispanic	3,312	3,009	48
Non-black, non-Hispanic	47,601	34,161	42
Highest education			
Less than high school diploma	11,315	6,713	37
High school diploma	19,112	15,875	45
Some college/vocational school	13,345	11,157	46
Bachelor's degree or more	12,653	6,900	35
Employment status			
Not employed	19,917	16,403	45
Employed	36,508	24,242	40
Household income (1)			
Less than $10,000	9,433	3,616	28
$10,000 or more	46,992	37,029	44
Household income (2)			
Less than $25,000	25,714	13,738	35
$25,001 to $50,000	16,837	13,632	45
More than $50,000	10,468	10,645	50

NOTE: Numbers equal the unweighted number of adults.
SOURCE: Special tabulations from the 1992 Current Population Survey (CPS), Adult Education Supplement.

Table 6 shows the participation rates of adults who responded for themselves and those who had proxy respondents. The differences in participation rates for adults who responded for themselves and those with proxy respondents are small (3 to 4 percent). Self-reporters were slightly more likely to be participants than those with proxy respondents. However, as noted above, these small differences might be the result of the nonrandom chance of proxy status (persons for whom proxy respondents reported on AE participation may be more likely to be participants than nonparticipants) rather than the lack of difference between the two groups of adults.

Table 6.—Percent of adults participating in adult education activities, by source of report: 1992

Participation status	Number (in thousands)	Percent participating in		
		Any activity	Any activity excluding full-time college	Any activity excluding college
All adults	169,722	24.0	20.5	17.0
Self reporter	97,947	24.0	21.7	18.8
Proxy reporter	71,758	24.0	18.9	14.5

NOTE: Excludes about 8 percent of the sample, for whom the source of the report (self/proxy) was not identified.
SOURCE: Special tabulations from the 1992 Current Population Survey (CPS), Adult Education Supplement.

To examine the extent to which estimates of participation are affected by differences in the characteristics of self-reports and proxy reports, a logistic regression analysis was conducted. In the regression models, the variable being predicted was participation status (either a participant or not a participant). The predictor variables were those related to either participation status or self/proxy status. In addition to the predictor variables, an indicator variable for proxy status (1 if a proxy and zero if not) was included in the models. Table 7 shows the predictor variables in the logistic regression model where the variable being predicted was participation in any type of adult education activity, excluding full-time college enrollment.

The first step was to evaluate whether or not proxy status was an important predictor for AE participation when the other predictor variables were included in the models. For all three types of adult education (any activity, excluding full-time college, and excluding any college activity), the proxy indicator was statistically significant, confirming the importance of proxy response status in estimating AE participation.

The regression analysis confirms the importance of proxy reporting and suggests that the small differences in participation rates in table 6 may be due to the nonrandom assignment of proxy reporting status. To examine this more carefully and quantify the proxy reporting effect, the parameter estimates from the logistic regression models can be used to estimate what the participation rate would have been in the CPS:92 if all adults had reported for themselves. This is done in two steps. First, the probability of participating in adult education was estimated for each sampled adult in the CPS:92 using the estimated regression parameters given in table 7, but the self/proxy indicator was always set to self. This resulted in an estimated probability of participation if all adults self-reported. Second, the estimated probabilities were summed over all the sampled adults using the CPS:92 estimator weights to produce a predicted participation rate.

Table 7.—Logistic regression parameters for a main effects model of AE participation, excluding full-time degree programs

Model parameter	Parameter estimate	Standard error
Intercept	1.82	.04
Whether self-reported or proxy-reported	-.28	.02
Whether had a high school diploma or not	1.36	.04
High school diploma	.96	.02
Some college or associate's degree	.33	.02
Whether employed or not	-.41	.02
Family income under $25,000	.51	.02
Family income between $25,000 and $49,999	.20	.02
Gender	-.06	.02
Age 16 to 25 years old	-1.04	.03
Age 26 to 55 years old	-.95	.03

SOURCE: Special tabulations from the 1992 Current Population Survey (CPS), Adult Education Supplement.

Table 8 shows the observed participation rates and the rates predicted if all adults had reported for themselves. The participation rate for any activity excluding full-time college is estimated to be 2.2 percent greater if all the adults had reported for themselves (22.7 - 20.5 = 2.2). For the other types of participation, the rates increase nearly 3 percent, using the same modeling procedures.

Thus, these results indicate that proxy reporting in the CPS:92 probably resulted in a bias of nearly 11 percent in the percent of adults who participated in adult education activities (2.7 percent is 11.3 percent of the observed participation rate of 24.0 percent for activities excluding full-time college). If all adults had responded for themselves, it is estimated that the participation rate for any AE activity would be about 27 percent. While this is a significant source of error, proxy reporting accounts for a relatively small part of the difference between the CPS and NHES estimates.

Table 8.—Observed and predicted participation rates if all adults had self-reported, by type of participation: CPS:92

Type of participation	Observed participation rate	Predicted self-reported participation rate
Any adult education activity	24.0	26.7
Activity excluding full-time college	20.5	22.7
Activity excluding college	17.0	20.1

SOURCE: Special tabulations from the 1992 Current Population Survey (CPS), Adult Education Supplement.

Survey Context

The context in which a survey takes place can have a substantial impact on the resulting estimates. Many readers may think of survey context effects in terms of question order; indeed this is related to the issues we address. But this effort takes a broader view of the context in which the survey takes place. In this section, we address three aspects of survey context that could have an effect on estimates of AE participation: questionnaire wording, sponsorship, and interview supplement status. Each of these aspects of the survey create a context that may affect the interviewers' and respondents' perception of the content and import of the survey.

Two other aspects of survey context were considered, but are not addressed in detail here, because we do not believe that they have an impact on estimates of AE participation. The first of these is the mode of administration. While mode effects have been documented in the literature (Sudman and Bradburn 1974; Bradburn 1983; Dillman and Tarnai 1991), this does not seem to be a plausible source of differences in the NHES and CPS estimates of participation. The majority of CPS interviews are conducted by telephone, which is the only NHES mode of administration. A second area that was considered is the timing of the surveys. The NHES AE components were conducted during the winter and early spring months, where as the earlier triennial CPS AE supplements were conducted in May, and the CPS:92 was conducted in October. The time of year might have had an important impact on recall if AE activities were tied to a traditional school year, and this could be used to prompt recall. However, many AE activities are not structured around a traditional school year, and all surveys under consideration had 12-month recall periods.

Questionnaire Wording

The way questions are asked in a survey can have a major impact on responses, as is well documented in the literature (Groves 1989; Converse and Presser 1986; Schwarz and Hippler 1991; Kalton and Schuman 1982). Therefore, it is reasonable to expect that the way in which a question about AE participation is asked could have an impact on estimates of participation. Converse and Presser (1986; p. 18) note the considerable difficulty inherent in attempting to convey a frame of reference to a respondent and having the respondent adhere to that frame of reference in the interview. Questionnaire items on participation can attempt to convey the frame of reference in a number of ways, for example:

- provide examples or definitions that clarify the concept of adult education and what it includes;
- set exclusionary criteria to prevent "false positives"; and
- provide time parameters that assist the respondents' recall.

In each of the data collections discussed in this report, specific questions were asked that were designed to provide the respondent with prompts and recall aids so that all appropriate educational activities would be reported. However, the questions were not the same in each of the data collections. The specific questions for each of the five data sources appear in appendix A. This section provides a summary of wording differences and interpretation of some of the implementation. Details about how adult education was defined and how parameters affect estimates of participation rates will be discussed later.

In the CPS:84, the NHES:91, the CPS:92, and the NHES:95 Splice interview, the words "adult education" were used in at least some of the questions or to introduce a series of questions. Cognitive laboratory work conducted for the NHES:95 indicated that the phrase "adult education" has different meanings for different people. Some persons think of formal instruction, and some think of classroom settings only. Many adults exclude courses, classes, or lessons taken for recreational purposes when thinking about adult education. While a list of

specific activities followed the words "adult education," some respondents may have been focusing on their own conception of "adult education" when responding to the items. An intensive reinterview Bias Study conducted for the NHES:95 supports this notion, and suggests that respondents may form their own paradigm as to what is included in the survey very early in the interview, especially when the initial questions focus on "traditional" classroom activities such as basic skills programs, English as a Second Language (ESL) programs, and postsecondary credential programs, as in the NHES:95 (Brick et al. 1996).

Defining the Parameters of Adult Education. Different approaches were used in the various data collections to inform respondents about the nature of the interview and set up the response paradigm. Often this was done by providing the adults with inclusionary and exclusionary information on adult education. In the CPS:84, a flashcard was provided that gave a definition of adult education, and provided examples of types of activities or courses that would or would not be included in the definition. The examples given in the flashcard did not specifically mention English as a Second Language (ESL) or GED preparation courses, which were explicitly included in the other surveys in this analysis, although these activities could have been included by respondents under categories such as: "all adult and continuing education and noncredit courses or activities," or "basic instruction for adults who have never attended school or who have interrupted their formal schooling at the elementary or secondary level." It is difficult to know exactly how this flashcard was used, because 70 percent of the interviews were conducted by telephone and therefore most respondents did not see the flashcard. Interviewers were instructed to read or summarize the information on the card for the respondents. However, because the amount of information contained on the card was fairly extensive, many respondents may not have absorbed and retained all of the information, even if the interviewers did read it. In addition, it is not known how interviewers were trained to summarize the card.

In the CPS:92, the questions were included as a part of the October education supplement, and no AE-specific introduction was provided. This could be partly responsible for the large differences between the NHES and the CPS:92 estimates.

The introduction in the NHES:91 and the NHES:95 Splice interviews was very different from that of the CPS:84 and the NHES:95 AE interview. In the NHES:91 and the NHES:95 Splice sample, respondents were told that the survey covered "three kinds of educational activities over the past year: full-time school, part-time school, and all other kinds of adult education." Respondents were also informed that educational activities for job-related purposes, personal enjoyment, or recreation were included. No detailed information was provided prior to the specific questions about AE participation. Because these items were designed specifically for telephone administration, lengthy introductory explanations were avoided.

In the NHES:95 interview, the introductory approach was substantially modified based on experience from previous data collections and the results of cognitive laboratory work and telephone field testing. Adult education was not specifically mentioned in the introduction. Rather, the questionnaire was structured so as to have a section on each type of adult education. Each type of activity was asked about separately, with appropriate explanation or examples. Thus, each section defined a type of activity and provided examples or exclusions regarding that specific type of activity. (The specific items appear in appendix A.)

The different NHES approaches to introducing the adult education items did not result in differences in participation rates between the NHES:95 AE and the Splice sample (which was the same as the NHES:91).

Exact Wording. In their work on the disparities in training estimates, Zemsky and Shapiro (1993) note that items from different surveys often use different wording and formats to collect information on participation. The use

of different items in various data sources, including the National Longitudinal Survey of Youth, the Survey of Income and Program Participation, the triennial CPS surveys, and High School and Beyond, present the researcher with a considerable challenge in developing a systematic measure of participation. A similar challenge is found in comparing CPS and NHES items.

In addition to differences in the introductions and definitions of activities in the CPS and NHES interviews, there were also differences in the specific activities that were included. The NHES:95 differs significantly from the CPS:84, the NHES:91, the CPS:92, and the NHES:95 Splice interviews, all of which are quite similar to one another. For example, the CPS:84 included courses taken by "correspondence, radio, television, or newspaper...." The NHES:91, CPS:92, and NHES:95 Splice interviews included "courses by mail, television, radio, or newspaper." Also, all of the instruments except the NHES:95 AE interview asked about continuing education courses or noncredit courses; private instruction or tutoring; education or training given by employers, labor organizations, neighborhood centers, churches, or community groups; or any other "organized educational activity." While the CPS:84 asked about courses for adults who had not finished high school, the NHES:91, CPS:92, and NHES:95 Splice interviews asked about instruction in basic skills such as math and English, and also asked about instruction in English as a Second Language.

In the NHES:95, items and questionnaire sections focusing on six types of AE were developed: English as a Second Language; basic skills including adult basic education (ABE) and preparation for the General Educational Development (GED) examination; credential programs to earn college degrees or vocational, technical, or occupational certificates or diplomas; apprenticeship programs; work-related courses or training; and other formal structured courses, such as personal development, recreation, and so on. The NHES:95 did not specifically ask about correspondence courses or those taken by mail, radio, television, or newspaper, and the section on other formal structured courses (also called personal development courses) specifically asked for courses "where there was an instructor."

The new approach in the NHES:95 AE interview created a concern about the impact restructuring of the instrument and changes in wording might have on estimates of participation. The NHES:95 Splice interview was implemented primarily to compare estimates using the NHES:91 questions in the Splice interview and the new NHES:95 AE questions in a concurrent data collection. This permitted an assessment of whether any change in participation rates could be attributed to changes in the items themselves, and the extent of the instrument effect on the estimates. In fact, however, the participation rates for the NHES:95 AE interview and the NHES:95 Splice interview were virtually identical -- 40.2 percent and 40.0 percent.

Because the NHES:95 items and the NHES:95 Splice items were collected at the same time using the same survey procedures and yielded nearly identical estimates of participation, it appears unreasonable to attribute the large differences between CPS and NHES estimates to differences in item wording. Also, this evidence suggests that the apparent increase in adult education between the NHES:91 and the NHES:95 should not be attributed to wording differences in items concerning participation. However, there are other factors related to the survey context that must be considered.

Interview Status: Sponsorship and Survey Focus

Two other context differences between the NHES and the CPS are so closely related as to be inseparable — sponsorship of the survey and the primary focus of the survey activity. In the NHES, the respondents are told that this is an interview conducted for the U.S. Department of Education and is related to education issues. The CPS is a survey conducted by the Bureau of the Census for the U.S. Department of Labor to

estimate characteristics of the labor force. The questions about adult education are only included in a supplement to the CPS and are not the main focus of the study. Thus, the overall context of the interviews with adults about education are different from the perspective of both the respondent and the interviewer.

These differences may manifest themselves in numerous ways. For example, the NHES interviewers undergo 16 hours of specific training to conduct the NHES interviews, including practice interviews under the direct supervision of trainers and telephone center staff. The training for supplements in the CPS is minimal, most often consisting of a home-study package that the interviewers are supposed to read. The level of training can make an important difference in the quality of the interviews, as suggested by Brick et al. (1995) in a comparison of interviewer effects in two surveys. Perhaps the training or lack of training sends a more direct message to the interviewers about the importance of the interview. If the interview is a supplement with little or no training required, then the interviewers may perceive the data to be less important.

It is possible to speculate on how the overall context of the survey might affect the responses to the survey, but these speculations cannot be quantified due to the lack of data. For example, it seems likely the responses to standard items, such as college enrollment, that are asked every year in the March CPS, would be more reliable than the questions about other types of adult education. In fact, the AE Bias Study (Brick et al. 1996) showed that even in the NHES:95 many of the adults under-reported less formal types of adult education activity (in particular, work-related and personal development courses). It is very likely that this type of under-reporting was even more prevalent in the CPS for the reasons discussed above.

As suggested above, the status of a survey as being a supplement to another survey could have an effect on the quality of the data being collected. Although no references in the literature were found that addressed this specific issue, it is interesting to note that Shapiro (1987) did investigate the opposite: the effect a supplement might have on the estimates from the core study. In a review of four surveys, he found that the core estimates were affected when supplementary questions were asked later in the interview (after the core items were collected). He speculated that the observed differences might be the result of the interviewer's anticipation of the supplemental questions that might alter the probing that is done in the core study.

Shapiro's results suggest that it is very possible that the supplement estimates may also be affected by the core study, even though he did not examine this situation. For example, it is possible that the interviewer and/or respondent may place less attention on the items in a supplement than on the core items, leading to less thoughtful administration and response to the supplementary items. Although it is not possible to quantify the difference without a follow-up or reinterview study to the CPS specifically designed for this purpose, it is feasible that the context of the survey as a supplement could have resulted in under-reporting of participation of adult education in the CPS.

Findings of the NHES:95 Bias Study cited above (Brick et al. 1996) and the supplement status of the CPS items on AE participation may interact to produce the observed estimates. The Bias Study results suggest that the reporting of adult education activities, particularly those that fall outside of formal schooling, is a cognitively demanding task. It may be that respondents are more successful at rising to this task in a survey that focuses specifically on adult education, as compared to one in which adult education is a supplementary issue. The CPS has a long history of successfully collecting information on formal schooling, which appears from the NHES:95 findings to be a less demanding task for the respondent.

Summary

Reliable estimates of participation in adult education are important for a number of reasons. One of the key roles of these participation rates is to inform the public about the National Educational Goal (National Education Goals Panel 1994), which states that "By the year 2000, every adult American will be literate and will possess the knowledge and skills necessary to compete in a global economy and exercise the rights and responsibilities of citizenship." Participating in various forms of adult education is an activity that may support achieving this objective.

The focus of this study is an assessment of reasons that estimates from the NHES and CPS, two important studies that measure adult education participation, are so different. As noted in table 1, the estimates from the CPS are substantially lower than those from the NHES. The report examined a number of methodological, definitional, and operational factors that might have had an impact on the differences in the estimates. Some of these factors could be quantified so as to estimate the potential impact they had on the estimates, while other factors evade measurement given the available data. Relevant findings are summarized in table 9 and discussed below.

The 1984 CPS estimate of participation in adult education excluding full-time college was 14 percent and for 1992 was 21 percent. An increase of 7 percent in adult education over the 8 years is reasonable given the efforts made by government and business to increase the skills of adults during this time. However, the two CPS studies used very different approaches (in particular, different approaches to selecting adults) that should have had a substantial influence on the participation estimates. As explained earlier, if the CPS:84 had sampled all adults regardless of the responses of the household respondent, it is estimated that the 'switching rate' would have caused the participation rate in 1984 to be 23 percent. This is close to 26 percent adjusted estimate from the CPS:92. This very modest increase in participation rates in adult education between 1984 and 1992 is not consistent with what experts in adult education expect (Kim et al. 1996), nor is it consistent with the higher rates estimated in the NHES. This raises some questions about the validity of the CPS:92 estimates.

Comparing the CPS and the NHES estimates, a number of factors were considered. One of the most obvious factors is the bias in the NHES estimates due to the failure to sample adults in households without telephones. However, the empirical evidence clearly indicates that the undercoverage bias in the NHES estimates is very small (less than one percent), especially when compared to the differences between the CPS and NHES estimates that range from 13 to 20 percent.

A second methodological difference is the estimated bias due to nonresponse that affects both surveys, but has a larger impact on the NHES because of the lower response rate in this study. The nonresponse biases could not be estimated directly because of the lack of data on the differences between respondents and nonrespondents to the surveys. Nevertheless, by making some assumptions about these differences, an upper bound on the differential nonresponse bias was estimated. The bound shows that the NHES may overestimate the participation rate by up to 5 percent more than the CPS. This is a potentially important source of bias, but it is an upper bound and the actual bias due to nonresponse is probably less than 5 percent.

Table 9.—Summary of factors associated with possible biases in estimates of adult education participation, by survey and possible size of bias

Factor	Survey	Possible size of bias[1]
Sampling only participants	CPS:84	-9%
Sampling only telephone households	NHES:91, NHES:95, and Splice sample	<1%
Unit nonresponse	CPS:84 and CPS:92 NHES:91, NHES:95, and Splice sample	<3%[2] <8%[2]
Proxy respondents	CPS:84 and CPS:92	-3%[3]
Context effects		
Introductory statements	All surveys	No measurable effect
Wording	All surveys	No measurable effect
Supplemental status	All surveys	Unmeasurable[4]
Interviewer training	All surveys	Unmeasurable[4]
Survey sponsorship	All surveys	Unmeasurable[4]

[1]Bias is the difference between the survey estimate and expected population value. A negative bias indicates the survey estimate is less than the population value.
[2]Biases estimated for the CPS:92 and NHES:95.
[3]Bias estimated for the CPS:92.
[4]These context effects can not be estimated from the available data, but could be substantial.
SOURCES: U.S. Department of Commerce, Bureau of Census, Current Population Survey (CPS), 1984 Adult Education Supplement, 1992 Adult Education Supplement; U.S. Department of Education, National Center for Education Statistics, National Household Education Survey (NHES), spring 1991, spring 1995, spring 1995 Splice Sample Interview.

A third potential source of error was the use of proxy respondents, particularly the practice in the CPS where other adults could respond for the sampled adult. In the NHES, the sampled adult was the only person who could complete the extended interview and the responses of other adults in the household were only used for sampling purposes. The use of proxy respondents was found to be an important predictor of AE participation of the adults in the sample, with those adults who responded themselves being more likely to participate. By using logistic regression analysis, the potential impact of proxy reporting was estimated for the CPS:92. These findings show the estimates from the CPS:92 are biased downward by about 3 percent. No corresponding bias exists in the NHES estimates, since proxy reporting was not permitted.

The next aspect of the surveys considered was the overall context of the surveys. As noted, the literature on context effects is diverse, and in some cases context effects can be substantial. The first two aspects of context that were considered were the introductory approach that sets the groundwork for the survey and questionnaire wording. The NHES:95 Splice sample, a methodological study especially designed and implemented to address these issues, reveals that these two factors are not a source of the differences between the NHES and CPS estimates.

Other context issues were considered but could not be quantified. One of these was the fact that the adult education questions in the CPS were a supplement to the core CPS survey. This clearly resulted in different operational approaches that may have influenced the interviewers and the respondents. The training of interviewers for the adult education interviews was also obviously different. The question is whether this affected the estimates and, if so, by how much. In addition, supplemental status may result in the questions holding a place of lesser importance or focus in the minds of respondents, and perhaps interviewers. The second related issue is the sponsorship of the study. Sponsorship has been shown to have an influence on the responses to a survey, but again this cannot be quantified for these studies.

Putting these sources of error together and assuming the errors are additive, much of the difference between the NHES and CPS estimates of participation could be explained. For example, the NHES:91 estimate of 33 percent may be an overestimate by as much as 5 percent due to undercoverage and nonresponse bias, while the CPS:92 estimate of 21 percent may be an underestimate by as much as 3 percent due to proxy reporting and nonresponse. The remaining difference of 4 percent (28% - 24% = 4%) could easily be accounted for by context effects.

While this approach does account for much of the difference, it is not a very satisfying solution for several reasons. First, the CPS:92 estimates appear to be out of line with the other estimates, including the CPS:84 estimates. As noted above, the CPS:84 estimates adjusted for not sampling nonparticipants who might have participated results in an estimate of 23 percent, only very slightly lower than the 26 percent adjusted CPS:92 estimate. Second, the differential nonresponse bias in the two surveys is really an upper bound and the difference between the NHES and CPS due to this source is probably much less than 5 percent. Third, it is unlikely that the error sources are actually completely additive. The errors due to coverage, nonresponse, use of proxy respondents, and context effects almost certainly interact in some complex ways. However, approximating the influence of these effects as additive is all that can be done, given the data, and appears to be a reasonable approach.

The evidence that most conflicts with this simple approach to summing the errors is the Bias Study conducted in the NHES:95 (Brick et al. 1996). All of the sampled participants (based on the original NHES:95 interview) who were included in that intensive reinterview study proved to be participants, while 41 percent of the sampled nonparticipants reported an adult education activity that they had not reported in the original interview. The activities reported by these nonparticipants were examined and did appear to be real activities undertaken during the time frame of the survey. The findings in Bias Study strongly suggest that even the NHES:95 estimates, which are larger than any previous estimates of participation, may still underestimate participation. That study suggests that the estimates of participation rates might be substantially higher than 40 percent.

These issues make it difficult to arrive at a conclusion without some ambiguity, although some points appear to be based on solid foundation. The NHES estimates are probably subject to some bias due to nonresponse, but there is little bias coming from telephone coverage bias. The evidence from the Bias Study indicates that respondents are underreporting, so the overall estimates of participation in adult education are probably even larger than the estimates produced from the NHES. The CPS estimates from 1984 and earlier were biased downward due to several sources, most notably the failure to sample adults classified as nonparticipants by the household respondent, proxy response, and context effects associated with the survey being a supplement to a labor force survey. The underreporting of activities noted in the Bias Study for the NHES:95 are probably even greater in the CPS due to the lack of training with respect to the adult education supplement.

Although the results of this study are subject to other interpretations, a reasonable conclusion is that the NHES estimates of participation are more accurate representations of the percentage of adults who participate in some type of adult education than the CPS estimates. As the Bias Study suggests, the participation rate is likely to be even higher than the NHES estimates due to respondent underreporting activities. The CPS estimates are depressed by the series of factors noted above. Furthermore, the Splice sample shows that change in the participation rate between 1991 and 1995 is a reflection of an actual change in the rates and not an artifact of the survey methodology.

Since the results of this study are not definitive, it is interesting to consider options that could be used to further investigate the differences between the NHES and CPS estimates if future studies were to be conducted. A study of the CPS might be most useful to test the hypothesis that the CPS is severely biased downward. To conduct such a study, another supplement to the CPS could be conducted using the same approach used in 1992. An intensive reinterview, similar to the NHES Bias Study, could then be conducted with a sample of the respondents (both proxy and sampled adults) to ascertain the size of the bias in the estimates. This approach is rather expensive and should only be considered if future adult education surveys might be conducted as supplements to the CPS.

The biggest potential source of error in the NHES, other than respondent underreporting which has already been at least partially examined in the Bias Study, is unit nonresponse. This source of error is a significant problem for all NHES administrations, and for that matter all telephone surveys, because telephone surveys often result in lower response rates than in-person surveys. A number of methods could be used to address this concern. First and foremost, the importance of conducting the surveys using techniques to increase the response rates should always be considered. Given the best efforts to improve response rates, studies of nonresponse might be undertaken. Different study designs should be considered, such as record check studies, where appropriate and feasible. Follow-up studies could also be undertaken, but these studies tend to be expensive, especially if they involve matching telephone numbers to addresses and conducting in-person interviews. Less expensive methods, such as matching telephone numbers to files with demographic data on households, are feasible, but limited because the data in the files is often of poor quality and a large percentage of the telephone numbers may not be matched correctly. Despite these difficulties, some information from these studies might improve the understanding of the nature and size of nonresponse bias in telephone surveys.

REFERENCES

Anderson, R.E., and Darkenwald, G.G. (1979). *Participation and Persistence in American Adult Education*. New York: College Entrance Examination Board.

Bradburn, N.M. (1983). Response Effects. In P.H. Rossi, J.D. Wrights, and A.B. Anderson. (Eds.). *Handbook of Survey Research*. New York: Academic Press.

Brick, J.M. (1992). Undercoverage Bias in Estimates of Characteristics of 3- to 7-year-olds, Appendix H. *National Household Education Survey Methodology Report*. Unpublished report prepared for the National Center for Education Statistics. U.S. Department of Education, National Center for Education Statistics.

Brick, J.M. (1996). *Undercoverage Bias in Estimation of Characteristics of Adults and 0- to 2-Year-Olds in the 1995 National Household Education Survey*. NCES Working Paper 96–29. Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Brick, J.M., and Broene, P. (forthcoming). *Unit and Item Response Rates, Weighting, and Imputation Procedures in the 1996 National Household Education Survey*. Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Brick, J.M., Burke, J., and West, J. (1992). *National Household Education Survey Technical Report No. 2: Telephone Undercoverage Bias of 14- to 21-year-olds and 3- to 5-year-olds*. NCES 92–101. Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Brick, J.M., Kim, K., Nolin, M.J., and Collins, M.A. (1996a). *Estimation of Response Bias in the NHES:95 Adult Education Survey*. NCES Working Paper 96–13. Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Brick, J.M., McGuinness, R., Lapham, S., Cahalan, M., Owens, D., and Gray, L. (1995). Interviewer Variance in Two Telephone Surveys. *Proceedings of American Statistical Association, Section on Survey Research Methods*, 447-452.

Brick, J.M., Tubbs, E., Collins, M.A., and Nolin, M.J. (forthcoming). *Telephone Coverage Bias and Recorded Interviews in the 1993 National Household Education Survey*. NCES Working Paper 97–02. Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Brick, J.M., Wernimont J., Montes, M. (1996). *The 1995 National Household Education Survey: Reinterview Results for the Adult Education Component*. NCES Working Paper 96–14. Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Collins, M.A., Brick, J.M., Kim, K., Gilmore, S., and Stowe, P. (1996). *National Household Education Survey of 1995: Adult Education Data File User's Manual*. NCES Publication No. 96–926. Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Converse, J.M., and Presser, S. (1986). *Survey Questions: Handcrafting the Standardized Questionnaire*. Newbury Park, CA: Sage Publications.

Darkenwald, G.G., and Merriam, S.B. (1982). *Adult Education: Foundations of Practice*. New York: Harper & Row.

Dillman, D.A., and Tarnai, J. (1991). Mode Effects of Cognitively Designed Recall Questions: A Comparison of Answers to Telephone and Mail Surveys. In P.P. Biemer, R.M. Groves, L.E. Lyberg, N.A. Mathiowetz, and S. Sudman. (Eds.). *Measurement Error in Surveys*. New York: John Wiley & Sons.

Epstein, A.M., Hall, J.A., Tognetti, J., Son, L.H., and Conant, L. (1989). Using Proxies to Evaluate Quality of Life. *Medical Care*, 27:S91–S98.

Frazis, H.E., Herz, D.E., and Horrigan, M.W. (1995). Employer-Provided Training: Results from a New Survey. *Monthly Labor Review*, 4.

Groves, R.M. (1989) *Survey Errors and Survey Costs*. New York: John Wiley & Sons.

Hill, S. (1987). *Trends in Adult Education: 1969–1984*. Washington, DC: U.S. Department of Education, Center for Education Statistics.

Kalton, G., and Kasprzyk, D. (1986). The Treatment of Missing Survey Data. *Survey Methodology*, 12 (1), 1–16.

Kalton, G., and Schuman, J. (1982). The Effect of the Question on Survey Responses: A Review. *Journal of the Royal Statistical Society*, 145:42–73.

Kim, K., Collins, M.A., Stowe, P., and Chandler, K. (1995). *Forty percent of Adults Participate in Adult Education Activities: 1994–95*. NCES Publication No. 95–823. Washington, DC: Department of Education, National Center for Education Statistics.

Kim, K., Loomis, L.S., Collins, M.A., and Chandler, K. (1996). *Comparison of Estimates from the 1995 National Household Education Survey*. NCES Working Paper 96–30. Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Knowles, M.S. (1980). *The Modern Practice of Adult Education: From Pedagogy to Andragogy*. New York: Cambridge.

Korb, R., Chandler, K., and West, J. (1991). *Adult Education Profile for 1990–91*. NCES Publication No. 91-222. Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Lessler, J.T., and Kalsbeek, W.D. (1992). *Nonsampling Error in Surveys*. New York: John Wiley & Sons, Inc.

Maklan, D. and Waksberg, J. (1988). Within-household Coverage in RDD Surveys. In R.M. Groves, P.P. Biemer, L.E. Lyberg, J.T. Massey, W.L. Nicholls II, and J. Waksberg. (Eds). *Telephone Survey Methodology*. New York: John Wiley & Sons.

Mohadjer, L., Brick, J.M., and West, J. (1992). *Proxy Reports of Dropout Status in the NHES Field Test*. NCES Publication No. 92–103. Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Moore, J.C. (1988). Self/Proxy Response Status and Survey Response Quality. *Journal of Official Statistics*, 4:155–172.

National Education Goals Panel. (1994). *The National Education Goals Report: Building a Nation of Learners*. Washington, DC.

Schwarz, N., and Hippler, H.J. (1991). Response Alternatives: The Impact of Their Choice and Presentation Order. In P.P. Biemer, R.M. Groves, L.E. Lyberg, N.A. Mathiowetz, and S. Sudman. (Eds.). *Measurement Error in Surveys*. New York: John Wiley & Sons.

Shapiro, G. (1987). Interviewer-Respondent Bias Resulting from Adding Supplemental Questions. *Journal of Official Statistics*, 3:155–168.

Smith, T.W. (1990). Phone Home? An Analysis of Household Telephone Ownership. *International Journal of Public Opinion Research*, 2 (4).

Sudman, S., and Bradburn, N.M. (1974). *Response Effects in Surveys*. Chicago: Aldine.

Thornberry, O.T., and Massey, J.T. (1988). Trends in United States Telephone Coverage Across Time and Subgroups, In R.M. Groves, et al. (Eds). *Telephone Survey Methodology*. New York: John Wiley and Sons.

U.S. Department of Commerce. (1978). *The Current Population Survey: Design and Methodology*. Technical Report, No. 40. Washington, DC: U.S. Bureau of Census.

U.S. Department of Commerce. (1993). *Current Population Survey, October 1992: School Enrollment Technical Documentation*. Washington, DC: U.S. Bureau of the Census.

Zemsky, R., and Shapiro, D. (1993). *On Measuring a Mirage: Why U.S. Training Numbers Don't Add Up*. Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement.

Appendix A

Adult Education Participation Items

This appendix presents the adult education participation questions that were used in 1984 Current Population Survey Adult Education Supplement (CPS:84), in the 1991 National Household Education Survey Adult Education component (NHES:91), in the 1992 Current Population Survey Adult Education Supplement (CPS:92), in the 1995 National Household Education Survey Adult Education component (NHES:95), and in the 1995 National Household Education Survey Splice Sample Adult Education interview.

CPS:84 Adult Education Screening Items

31. Is ... attending or enrolled in a high school, college, or university?

Yes ..... (verify: High school, College or Univ.)
No

32. Is ... enrolled as a full-time or part-time students?

Full-time
Part-time

33. Is ... now attending or enrolled as a full-time students in a vocational or occupational program?

Yes No

34. Now I would like to ask some questions about ...'s participation in adult education activities. *(Read or show definition and list of examples on flashcard.)*
(Excluding full-time school attendance) during the past 12 months (that is, since May 1 a year ago) has ... *(Ask and mark each category)*

a. Taken any adult or continuing education or noncredit courses or educational activities?

Yes No DK

b. Taken any courses for credit as a part-time students in high school, college, vocational, or other school?

Yes No DK

c. Taken a course by correspondence, television, radio, or newspaper, or taken any private instruction or tutoring?

Yes No DK

d. Taken any courses or educational activities given by an employer, a labor organization, neighborhood center, a church, or another community group?

Yes No DK

e. Taken any instruction for adults who have not finished high school?

Yes No DK

f. Taken any other organized educational activities or courses during the past 12 months?

Yes No DK

CPS:84 Adult Education Supplement
Participation Items

1. Are you now attending or enrolled as a full-time student in a school of any type?

   Yes (Ask 2) No (Skip to 5)

2 Are you in a program leading toward the completion of elementary school or high school?

   Yes (Skip to 6) No

3. Are you in a college degree program (such as an associate's, bachelor's, master's, or doctoral degree program)?

   Yes (Skip to 6) No

4. Are you in a vocational or occupational program?

   Yes (Skip to 6) No (Skip to 6)

5. Are you now enrolled in a college degree program or university as a part-time student, in courses for credit toward a degree (such as an associate's, bachelor's, master's, or doctoral degree program)?

   Yes No

6. (Excluding full-time attendance in school) during the past 12 months, that is since May 1, 1983, have you taken part in any organized adult education courses or activities such as ....?
   (*Read or show definition and list of examples on flashcard.*)

   Yes (Ask 7) No (End questions for this person)

7. How many of these courses or activities did you participate in, including any that you did not complete?

FORM CPS-681
(3-31-81)

U.S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS

FLASHCARD

EXAMPLES OF COURSES AND ACTIVITIES

SURVEY OF ADULT EDUCATION

Adult education, for the purposes of this survey, includes all courses and other organized educational activities, taken by persons 16 years of age and over other than courses taken as a full-time[1] student in a program leading toward a high school diploma or a college degree or as a full-time[1] student in a vocational or occupational program.

SOME EXAMPLES OF COURSES OR ORGANIZED INSTRUCTION TO BE REPORTED IN THIS SURVEY ARE SHOWN BELOW. INCLUDE COURSES THAT WERE STARTED BUT DROPPED.

Automobile mechanics	Foreign languages	Photography
Bible study	Health care	Psychology
Biology	How to stop smoking	Reading or writing skills
Bridge	Mathematics	Real estate
Child care	Music lessons	Tennis lessons
Driver education	Needlework	Typing

To Be Reported

1. All adult or continuing education and noncredit courses or activities.
2. Courses taken for credit as a part-time[2] student in a high school, college, vocational, or other school.
3. Courses given by correspondence, television, radio, newspaper, tutor, or private instructor.
4. Courses or educational activities given by an employer, a labor organization, a neighborhood center, a church, or other community group.
5. Basic instruction for adults who have never attended school or who have interrupted their formal schooling at the elementary or secondary levels.

Not To Be Reported

1. Courses taken as a full-time[1] student in a program leading toward completion of elementary, junior, or high school (including a work study program), or toward an academic degree (such as, an Associate of Arts, Bachelor of Arts, Master of Science, or Doctor of Philosophy).
2. Courses taken as a full-time[1] student in a vocational or occupational program.
3. Courses or educational activities in an apprenticeship or internship program.
4. Self-directed learning activities without the guidance of a teacher or sponsoring agency.
5. Individual counseling (such as, psychotherapy, marriage counseling, and vocational counseling) or group therapy.
6. Religious activities that are primarily for worship.

NHES:91 Adult Education Participation Items

Screening Items

AINTRO. We are also interested in knowing about the educational activities of people 16 years old and older.

Now I am going to ask you some questions about ((NAME/AGE/SEX'S)/YOUR) participation in three kinds of educational activities over the past year: full-time school, part-time school, and all other kinds of adult education.

S12INTRO. First, (has (NAME)/have you) been enrolled as a full-time student in any kind of school, training program, or other educational program in the past 12 months, that is since (INTERVIEW MONTH), 1990?

YES 1
NO 2

IF S12=1 THEN ASK S12A, OTHERWISE SKIP TO S13

S12A. In which of the following types of full-time educational programs (was (NAME/AGE/SEX)/were you) enrolled?
(VERIFY: PAST 12 MONTHS ONLY)

		YES	NO
a.	An elementary school, junior high school, or high school program?	1	2
b.	A program leading to an associate's degree?	1	2
c.	A program leading to a bachelor's or more advanced degree?	1	2
d.	A vocational or occupational training program after completing or leaving high school?	1	2
e.	An adult literacy or basic skills program	1	2
f.	An English as a Second Language (ESL) program	1	2
g.	Some other program (SPECIFY) _____	1	2

IF S12A-CATEGORY A=1 THEN ASK S12B, OTHERWISE SKIP TO S13

S12B. (Is (NAME/AGE/SEX)/Are you) currently enrolled as a full-time student in an elementary school, junior high school, or high school program?

YES 1
NO 2

IF S12B=1 THEN DISCONTINUE SERIES

S13. [In addition to (his/her/your) full-time studies] (Has (NAME/AGE/SEX)/Have you) been enrolled as a part-time student at a college or university in an associate's, bachelor's, or graduate degree program, in the past 12 months?

YES 1
NO 2

S14. Now I'm going to read you a short list of other kinds of adult education. [Not counting (full-time school) (or) (part-time courses taken for credit toward a degree)] Please tell me whether ((NAME/AGE/SEX) has/you have) been involved in any of these in the past 12 months.

		YES	NO
a.	Continuing education courses or noncredit courses?	1	2
b.	Courses by mail, television, radio or newspaper?	1	2
c.	Private instruction or tutoring?	1	2
d.	Educational or training activities given by an employer, labor organization, neighborhood center, church, or community group?	1	2
e.	Instruction in basic skills such as math, or reading and writing English?	1	2
f.	Instruction in English as a Second Language?	1	2
g.	Or, any other organized educational activities? Please describe: _____	1	2

Extended Interview Items

IF ADULT IS ALSO THE SCREENER RESPONDENT THEN READ MODIFIED VERSION OF THE INTRODUCTION AND SKIP TO THE BOX AFTER A1B

Hello, my name is (INTERVIEWER). I am calling on behalf of the U.S. Department of Education. We are conducting a voluntary and confidential national study about the educational activities of adults, and would like to ask you a couple of questions about your participation in three kinds of educational activities over the past year: full-time school, part-time school, and all other kinds of adult education. Keep in mind that we are interested not only in classes taken for a degree or certificate, but also in educational activities that are job related, and those taken for personal enjoyment or recreation.

A1INTRO. First, have you been enrolled as a full-time student in any kind of school, training program, or other educational program in the past 12 months, that is since (INTERVIEW MONTH) 1, 1990?

FTANY
YES 1
NO 2

IF A1INTRO=1 THEN ASK A1A, OTHERWISE SKIP TO A4

A1A. In which of the following types of full-time educational programs were you enrolled? (VERIFY: PAST 12 MONTHS ONLY)

			YES	NO
FTSCHOOL	a.	An elementary school, junior high school, or high school program?	1	2
FTASSOC	b.	A program leading to an associate's degree?	1	2
FTBACHLR	c.	A program leading to a bachelor's or more advanced degree?	1	2
FTVOCA	d.	A vocational or occupational training program after completing or leaving high school?	1	2
FTBASIC	e.	An adult literacy or basic skills program	1	2
FTENGLSH	f.	An English as a Second Language (ESL) program	1	2
FTOTHER	g.	Some other program (specify) _____	1	2
FTGED	h.	*GED*	1	2
FTCERT	i.	*Professional certification/recertification*	1	2

A4. [In addition to your full-time studies] Have you been enrolled as a part-time student at a college or university in an associate's, bachelor's, or graduate degree program, in the past 12 months?

PTENROLL	YES	1
	NO	2

A8. Now I'm going to read you a short list of other kinds of adult education. [Not counting (full-time school) (or) (part-time courses taken for credit toward a degree)] Please tell me whether you have been involved in any of these in the past 12 months.

			YES	NO
OTNONCR	a.	Continuing education courses or noncredit courses?	1	2
OTCORRS	b.	Courses by mail, television, radio or newspaper?	1	2
OTPRIV	c.	Private instruction or tutoring?	1	2
OTGROUP	d.	Educational or training activities given by an employer, labor organization, neighborhood center, church, or community group?	1	2
OTBASIC	e.	Instruction in basic skills such as math, or reading and writing English?	1	2
OTENGL	f.	Instruction in English as a Second Language?	1	2
OTOTHER	g.	Or, any other organized educational activity? Please describe: _____	1	2
OTGED	h.	*GED*	1	2
OTCOMP	i.	*Computers (unspecified)*	1	2

55A. Has .... been enrolled as a full-time student in any kind of school, training program, or other educational program in the past 12 months, that is since October 1991?

YES 1
NO 2

55B. In which of the following types of full-time educational programs was enrolled during the past 12 months, that is, since October 1991? *(Ask and fill each one.)*

		YES	NO
a.	An elementary school, junior high school, or high school program?	1	2
b.	A program leading to an associate's degree?	1	2
c.	A program leading to a bachelor's or more advanced degree?	1	2
d.	A vocational or occupational training program after completing or leaving high school?	1	2
e.	An adult literacy or basic skills program	1	2
f.	An English as a Second Language (ESL) program	1	2
g.	Some other program (specify) _____	1	2

55C. (In addition to ...'s full-time studies,) has ...been enrolled as a part-time student at a college or university in an associate's, bachelor's, or graduate degree program, in the past 12 months, that is, since October 1991?

YES 1
NO 2

55D. Now I'm going to read you a short list of other kinds of adult education. [(Not counting full-time school) (or) (part-time courses taken for credit toward a degree)] Please tell me whether you have been involved in any of these in the past 12 months. *(Ask and fill each one.)*

		YES	NO
a.	Continuing education courses or noncredit courses?	1	2
b.	Courses by mail, television, radio or newspaper?	1	2
c.	Private instruction or tutoring?	1	2
d.	Educational or training activities given by an employer, labor organization, neighborhood center, church, or community group?	1	2
e.	Instruction in basic skills such as math, or reading and writing English?	1	2
f.	Instruction in English as a Second Language?	1	2
g.	Or, any other organized educational activity? Please describe: _____	1	2

NHES:95 Adult Education Participation Items

INTRO1. [READ DISPLAY IF RESPONDENT WAS NOT SCREENER RESPONDENT.] Hello, this is (INTERVIEWER) calling for the U.S. Department of Education. We are conducting a voluntary and confidential national study about the education of adults.
[SCREENER RESPONDENTS: The purpose of our study is to learn what kinds of educational activities adults take part in and why some adults do not participate. These questions usually take about 15 to 20 minutes.

B1. ESLANG These first questions are about English as a Second Language only. Please do not include other classes here. During the past 12 months, did you have a tutor or take any classes to learn English as a Second Language?

YES 1
NO 2

Ask C1 if A2 NE 1 (no high school diploma) or A4 = 1 (received high school diploma in the last 12 months).
If A3 NE 1 (foreign high school diploma), ask C1.
Else, go to D1.

C1. Not including regular day-time high school classes, during the past 12 months, did you have a tutor or take any classes:

			YES	NO
BSIMPROV	a.	To improve your basic reading, writing, and math skills?	1	2
BSGED	b.	To prepare to take the General Educational Development, or GED?	1	2
BSHSEQUV	c.	In some other high school equivalency program or adult high school program?	1	2

D1. (Not including the classes you told us about earlier,) During the past 12 months, did you take any courses that are part of a program, or a series of courses associated with a program leading toward...

			YES	NO
CRDEGREE	a.	A college or university degree, such as an associate's, bachelor's, or graduate degree?	1	2
CRVOCDIP	b.	A diploma or certificate from a vocational or technical school after high school or a formal vocational training program	1	2

E1. During the past 12 months, were you in a formal apprenticeship program leading to journeyman status in a skilled trade or craft?

APPRENTI
YES 1
NO 2

F1. Now, I'd like to ask about courses related to a job or career, whether or not you had a job when you took the courses. (Please don't include courses you already told me about.) Some examples are courses taken at your job, courses taken somewhere else that relate to your job or a new career, or courses for a license or certification you need for your job. Have you taken any of these in the past 12 months?

WRACTY
YES 1
NO 2

G1. Now, I am going to ask about any other courses where there was an instructor. (Please don't and crafts, sports or recreation, first aid or childbirth, Bible study, or any other types of courses we haven't talked about yet. Did you take any of these or other courses in the past 12 months?

SAACTY
YES 1
NO 2

NHES:95 Adult Education Interview
(Splice Sample)

Now I would like to ask you a couple of questions about your participation in three kinds of educational activities over the past year: full-time school, part-time school, and all other kinds of adult education. Keep in mind that we are interested not only in classes taken for a degree or certificate, but also in educational activities that are job related, and those taken for personal enjoyment or recreation. These questions usually take about 5 minutes.

A1INTRO. First, have you been enrolled as a full-time student in any kind of school, training program, or other educational program in the past 12 months, that is since (INTERVIEW MONTH) 1, 1994?

YES 1
NO 2
REFUSED ..... -7
DON'T KNOW ..... -8

A1. In which of the following types of full-time educational programs were you enrolled? (VERIFY: PAST 12 MONTHS ONLY)

		YES	NO	R	DK
a.	An elementary school, junior high school, or high school program?	1	2	-7	-8
b.	A program leading to an associate's degree?	1	2	-7	-8
c.	A program leading to a bachelor's or more advanced degree?	1	2	-7	-8
d.	A vocational or occupational training program after completing or leaving high school?	1	2	-7	-8
e.	An adult literacy or basic skills program?	1	2	-7	-8
f.	An English as a Second Language (ESL) program?	1	2	-7	-8
g.	Some other program?	1	2	-7	-8

SPECIFY_____

A9. Now I'm going to read you a short list of other kinds of adult education. [Not counting (full-time school) (or) (part-time courses taken for credit toward a degree)] Please tell me whether you have been involved in any of these in the past 12 months.

		YES	NO	R	DK
a.	Continuing education courses or noncredit courses?	1	2	-7	-8
b.	Courses by mail, television, radio or newspaper?	1	2	-7	-8
c.	Private instruction or tutoring?	1	2	-7	-8
d.	Educational or training activities given by an employer, labor organization, neighborhood center, church, or community group?	1	2	-7	-8
e.	Instruction in basic skills such as math, or reading and writing English?	1	2	-7	-8
f.	Instruction in English as a Second Language?	1	2	-7	-8
g.	Or, any other organized educational activities?	1	2	-7	-8

SPECIFY_____

United States
Department of Education
Washington, DC 20208–5651

Official Business
Penalty for Private Use, $300

Postage and Fees Paid
U.S. Department of Education
Permit No. G–17

Standard Mail (A)